REMARKS

Claims 1, 8 and 15 and pages 10, 23-25 of the Specification have been amended to clarify the wording wherein the letter "a" related to the number of bit "1" in claim 1 for an A type weighted block of n-bits which satisfies the relation $2^m < nCa$ with "a" being a positive integer. The number of bit "1" in a B type weighted block of n-bits is "n-a". The subscripts in the formula "$2^m <_n C_a$" were typographical errors and have now been corrected.

In a m:n block coding algorithm in accordance with the present invention, a weighted block of n-bit codeword should represent an original block of m-bit message. Therefore, the number of possible codewords in the weighted block is determined based on selectable combinations of the weighted blocks of n-bit codeword by means of the number of the "1" or "0" bit in the weighted block of n-bit codeword.

To embody the m:n block coding/decoding algorithm according to the present invention, the "a" relates to the number of bit "1" in a weighted block of n bits and can be calculated as $2^m < nCa$. In this regard, 2^m means the nth power of 2 and nCa means combinations of "n" taken "a" at a time. nCa equals $n!/\{a!(n-a)!\}$, which is "n" factorial divided by "a" factorial times "n" minus "a" factorial as known.

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For example, in the 8:11 block coding/decoding algorithm, as shown in the paragraph [0045] to [0047], the number "a" of bit "1" should satisfy a relationship $2^8 (=256) <_{11}C_a$ in order to sufficiently represent 256 8-bit messages. Since $_{11}C_4$ is 330 and $_{11}C_5$ is 462, respectively, "a" can be 4 or 5.

In case that "a" is 4, an A type weighted block of 11 bits has four bits of "1" and seven bits of "0". On the contrary, a B type weighted block of 11 bits has seven bits of "1" and four bits of "0" because the number of "1" in a B type weighted block is given by "11-4".

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CONCLUSION

Applicant now believes that the present application is in condition for allowance. Should the Examiner have any further questions, applicant requests that the Examiner call the undersigned to discuss to facilitate allowance.

Reconsideration and allowance of claims 1-21 is respectfully solicited.

Respectfully submitted
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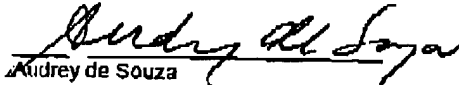   Eugene Lieberstein
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_____
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"1" in the weighted block of n bits can be calculated as follows:

$$2^m \leq {}_nC_a \qquad \underline{2^m \leq nCa} \qquad\qquad (1)$$

, wherein "m" and "a" are positive integers, respectively, and "n" is an odd integer larger than "m" and "a".

Since "a" is related to the bit number of bit "1" in one of two weighted blocks, the bit number "t" of bit "I" in the other weighted block can be calculated as follows:

$$t=n-a \qquad\qquad (2)$$

For example, in the 8:11 block coding and decoding algorithm, "a" should satisfy a relationship $256 < {}_{11}C_a$ $\underline{11Ca}$, wherein "a" is a positive integer between 4 and 7. Therefore, the 8:11 block coding algorithm has two selectable combinations.

A first selectable combination in the 8:11 block coding 20 and decoding algorithm consists of 4 and 7. For instance, if an A type weighted block of 11 bits has four bits of "1" and seven bits of "0" (or seven bits of "1" and four bits of "0"), each weighted block of 11 bits may be expressed as one of ${}_{11}C_4(=330)$ codewords. Since the original block of 8 bits is expressed as one of $2^8(=256)$ 8-bit messages, only 256 codewords among 330 codewords must be selected to represent

group corresponding to the $(2N-1)^{st}$ original block group and the $2N^{th}$ original block group, respectively, are combined to form a balanced coding group in which the bit number of bit "1" is equal to that of bit "0".

For example, if there are two coding groups BG1 and BG2, the bit number of bit "1" in the coding group BG1 is 65 since there are four bits of "1" in each of four A type weighted blocks and seven bits of "1" in each of seven B type weighted blocks while the bit number of bit "1" in the coding group BG2 is 56 since there are four bits of "1" in each of seven A type weighted blocks and seven bits of "1" in each of four B type weighted blocks. In the meantime, the bit number of bit "0" in the coding group BGI is 56 since there are seven bits of "0" in each of four A type weighted blocks and four bits of "0" in each of seven B type weighted blocks while the bit number of bit "0" in the coding group BG2 is 65 since there are seven bits of "0" in each of seven A type weighted blocks and four bits of "0" in each of four B type weighted blocks. Therefore, the bit number of bit "1" in two coding groups BG1 and BG2 is equal to that of bit "0" in two coding groups BG1 and BG2 as 65+56=121.

For the simplicity, the bit number of bit "1" in only two block coding groups BG1 and BG2 are added together and the bit number of bit "0" in only two block coding groups BG1 and BG2 25 are added together; however, it will become apparent to those skilled in the art that the bit number of bit "1" in all the

coding groups BG1-BGk is equal to that of bit "0" in all the coding groups BG1-BGk, k being an even Integer.

The block decoding algorithm of the second preferred embodiment is performed in a reverse process.

The block decoding algorithm first classifies each of the coding groups BG1-BGk into either the $(2N-1)^{st}$ coding group or the $2N^{th}$ coding group. The decoding algorithm for the $(2N-1)^{st}$ coding group is similar to that in the first preferred embodiment, and thus the explanation therefor has been omitted.

The decoding algorithm for the $2N^{th}$ coding group, for example, the coding group BG2, divides the $2N^{th}$ coding group into 11 weighted blocks BB2-2 to BB2-12, so that 11 bits of each of the weighed blocks BB2-2 to BB2-12 are summed. If the weighted block of 11-bit codeword is an A type weighted block of 11-bit codeword, the summation result is 4 since an A type weighted block has four bits of "1" and seven bits of "0", and if the weighted block of 11-bit codeword is a B type weighted block of 11-bit codeword, the summation result is 7 since a B type weighted block has seven bits of "1" and four bits of "0". Therefore, A type weighted blocks have smaller summation result than B type weighted blocks.

Referring to Fig. 4, since the second reference block RB2 is a B type weighted block having seven bits of "1" and four bits of "0" and types of weighted blocks BB2-2 to BB2-12 are decided by 11 bits of the second reference block RB2, it

Is ensured that seven weighted blocks having smaller summation result in the coding group BG2 are A type weighted blocks while four weighted blocks having larger summation results in the coding group BG2 are B type weighted blocks.

Meanwhile, each of the weighted blocks BB2-2 to BB2-12 produces a reference bit. Since a bit of "1" corresponds to an A type weighted block while a bit of "0" corresponds to a B type weighted block, the coding group BG2 can be represented as a sequence of reference bits 11101001011. This is equal to the bit sequence of the second reference block RB2. Therefore, it will become apparent to those skilled in the art that the second reference block RB2 can be reconstructed in the block decoding system and all the weighted blocks BB2-1 to 882-12 can be decoded as the original blocks OB2-1 to OB1-12.

Hereinafter, the block coding and decoding system for the second preferred embodiment of the present invention will be explained.

Fig. S presents a block diagram for illustrating a 20 block coding system in accordance with the second preferred embodiment of the present invention. The block coding system includes an analog-to-digital converter (ADC) 41, a buffering device 43, a first switch 45, a control device 47, an A type coding device 49, a B type coding device 51, a second switch and a third switch 55.

The ADC 41 digitizes an input image signal and provides